WORK WITH THE COMPUTER IN YOUR OWN LANGUAGE

IBM SAA LanguageAccess IBM

IBM SAA LanguageAccess: A straighter way to your information.

When you need information, you often ask a colleague. And, if you ask the right person, you can expect to get the right answer. Now you can ask your database for information in the same straightforward way.

Ask a question in your own language and go straight to the answer?

With IBM* SAA* LanguageAccess, you can use your own words to get information from the database. For example –

Sales database:

Who were the top performing salespersons in the western region in July, and how much did they sell?

Manufacturing database:

What is the average consumption of raw materials per plant in the chemical refineries?

Insurance database:

When does automobile insurance policy 37A8-20 expire, and what is its current premium?

Financial database:

Display the capital budget per department for computer hardware in 1990 in a pie chart?

You ask the question, LanguageAccess gives you the answer. Simple and straightforward. And LanguageAccess currently comes in two separate languages – English and German.

Language is the key

When you need information to make a decision, do you ask your Information Services (IS) department for the answer and then wait for a special report? Or, do you work with special query commands to retrieve the information? With these methods, it is often difficult to get the exact information you want, when you want it. Instead, consider the advantages offered by LanguageAccess.

With LanguageAccess, you can ask for information in your own language. You no longer have to memorize query commands or wait for someone else to find the information for you. This makes getting information quicker and easier. And that means you get more from your information investment – an advantage that can help you make important business decisions.

Based on proven technologies

Language has always been the basis for human communication. During the last few decades, research efforts have proven that a language and its grammar could be formally described and used in software applications.

The traditional method for accessing relational databases is with Structured Query Language (SQL*). LanguageAccess uses an IBM-developed technology to automatically translate your question into the SQL command necessary to reach your answer. Therefore, you can communicate directly and easily with the database when using LanguageAccess.

Use it today

LanguageAccess enhances your existing applications, such as the IBM Application System (AS*) and Query Management Facility (QMF*). It is the natural way to retrieve information stored in relational databases. Regardless of the type of information – sales, purchasing, personnel, or any other kind of information – LanguageAccess can help you access it today.

Looking ahead

Throughout the 1990s, you can expect continued advances in natural language technologies. Customers will increasingly demand the power, convenience, and utility offered by natural language access to relational databases. LanguageAccess will continue to expand to meet your business challenges.

From your very first question, you will notice what makes LanguageAccess different – language.

An example proves its ease

Imagine that you are the branch manager of a large stock brokerage firm. You are interested in knowing which stocks are paying the highest dividends and how the branch office is performing this month.

Questions

As a first-time LanguageAccess user, you can begin by asking the database what information is available. Simply type: *What do you know?* or *Do you know 'recommended list' and 'stock prices'?*

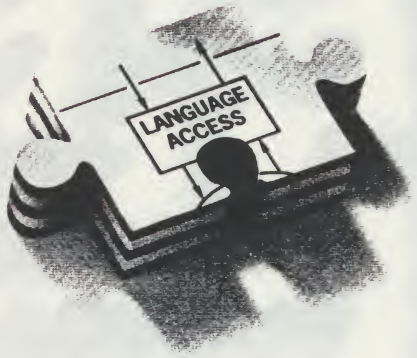
You will see a vocabulary list reflecting the information in the database. By browsing through the list, you can choose among the words to begin asking your specific questions.

Suppose *goal*, *recommended list*, and *brokers* are in the vocabulary list. With these words in mind, you might ask:

1. What high tech stocks in the recommended list are yielding more than 9 point dividends?

2. Which brokers in the Southshore branch reached their goals before December 15?

3. Show me their results in a bar chart.



Not only do these questions demonstrate the wide variety of ways in which you can ask questions, but they also demonstrate three powerful LanguageAccess features: making **comparisons**, performing **calculations**, and handling **ambiguity**.

The first question demonstrates how to use relative comparisons. Comparison words such as most, more than, greater than, less than, fewer than, and highest (to name a few), are convenient for examining and comparing information.

The second question demonstrates how you can specify calculations based on your definition of a word. For example, you might have defined *goal* as *'production per month greater than $10,000.'* In other words, the vocabulary can be adapted to your organization's definitions.

In the third question LanguageAccess demonstrates how it can handle ambiguous questions. If *results* had previously been defined to mean two different measurements, *'number of new accounts opened'* or *'gross production per month,'* then, when you asked: *Show me their results ...?* LanguageAccess would determine that you meant one of two alternatives:

... the number of new accounts opened ... or
... the gross production figures ...

LanguageAccess clarifies the question interactively by presenting possible interpretations.

Also, notice the pronoun *their* in the third question: *Show me their results...?* In this case, LanguageAccess understands that *their* refers to *brokers who reached their goals* in the question that you previously asked.

Answers

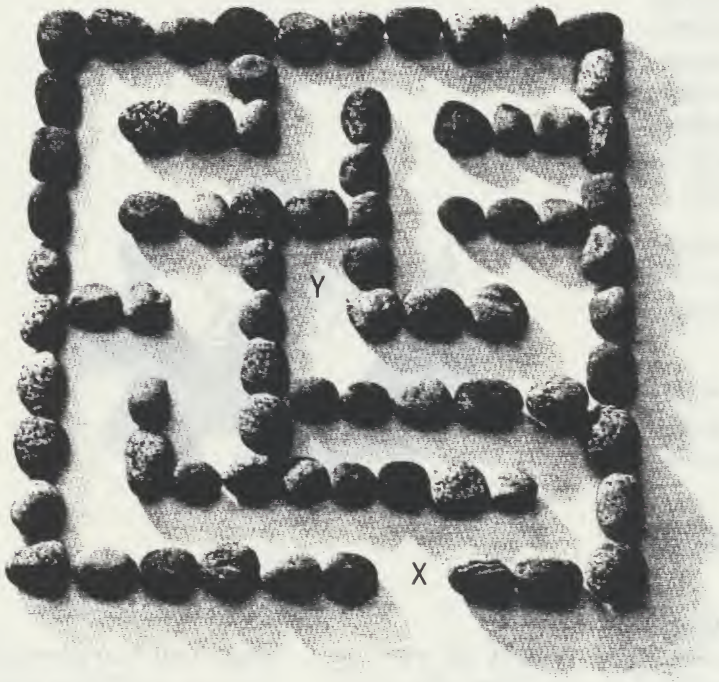
LanguageAccess uses the power of AS or QMF to display your answers. This lets you choose different ways to display your answer, such as in a pie chart, a table, or a histogram.

You can reuse questions that you have already asked by keeping them in a question log. You can also edit the question log, print it out, or send it to others so that they can use your questions.

Solution

Because of the great expressive power of LanguageAccess, you can ask your questions more precisely. Precise questions mean more accurate answers. And more accurate answers mean LanguageAccess could be the solution to your business needs.

Ask what you want, when you want. You'll reach the answer without obstacles.



Ask a question in your own language to get the information you need. It's that easy. LanguageAccess allows you to concentrate on what you want to know, rather than how you have to get it.

An asset for the executive

Executives can use LanguageAccess to help make important decisions more quickly.

Before LanguageAccess, retrieving information from a relational database meant communicating with database commands, such as SQL. LanguageAccess reverses the roles – now you can focus on the information rather than on the commands.

LanguageAccess allows everyone in your organization to reach the information they need. In fact, it's so easy to use, there's no need for formal training. More users and less training are good reasons that LanguageAccess can make your organization more productive.

And LanguageAccess follows the IBM System Application Architecture* (SAA). This assures that LanguageAccess will work consistently with other IBM SAA applications.

A partner for the professional

Professionals within your organization can use LanguageAccess to find the information they need for extensive analyses.

Unravel the database structure – Many query products require that you know how your information is organized before you can ask your question – for example, if the information is in the employee payroll table or in the employee benefits table.

Now, with LanguageAccess, you need only ask your question, and then let LanguageAccess determine where the information is located. Note, that the SQL access security is always preserved.

Reach freedom from query commands – The advantage of the LanguageAccess command-free operation is apparent when you compare a question in English to a typical SQL command. For example, with LanguageAccess, you can simply ask:

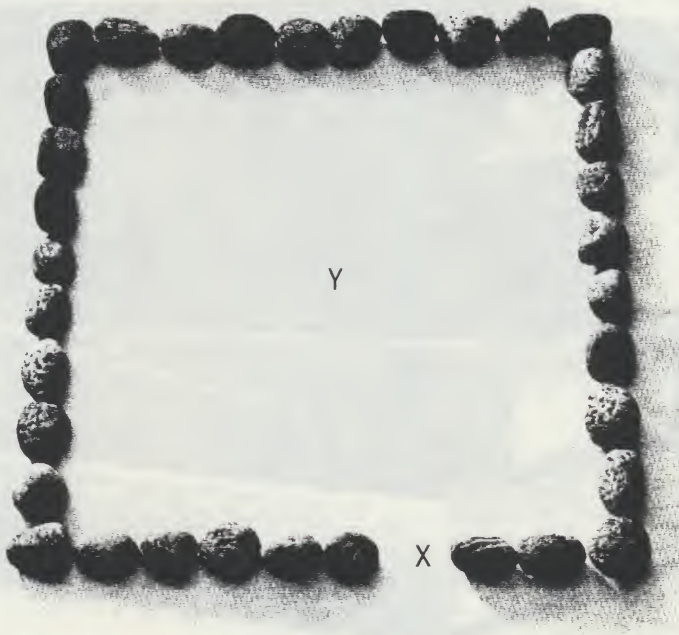
Who placed as many software orders as Garzillo?

To get the same information using SQL, you must enter a query command such as:

```
SELECT DISTINCT X1.NAME, X1.PURCHASENUMBER
  FROM PURCHASES X1, ORDERS X2,
    WHERE X1.PURCHASERNUMBER = X2.PURCHASERNUMBER
      GROUP BY X1.PURCHASERNUMBER, X1.NAME
        HAVING COUNT (*) =>
          (SELECT COUNT (*)
            FROM ORDERS X3, PURCHASERS X4
              WHERE X3.PURCHASERNUMBER = X4.PURCHASERNUMBER
                AND X4.NAME = 'Garzillo'
                  GROUP BY X3.PURCHASERNUMBER)
```

Develop your own question logs – With LanguageAccess, you can develop your own question logs to use when you perform routine tasks. This frees you from the need to ask your IS department to develop a special database application to retrieve the same information.

Question logs allow you to record your conversations with the computer for future use, by saving questions. The question logs can then be reused on a regular basis or sent electronically to others for their consideration and use.

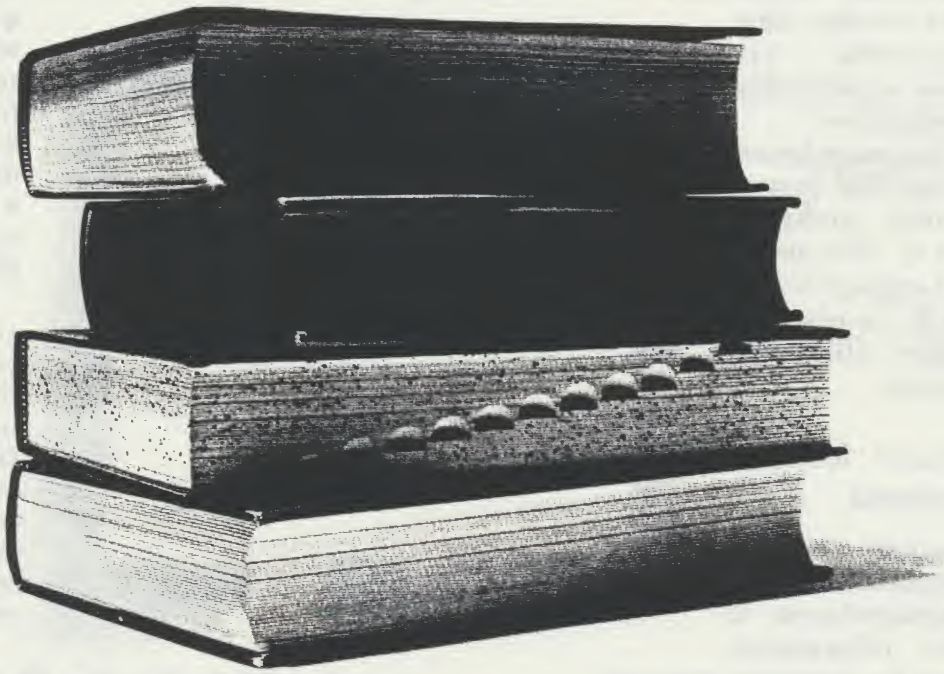


A vehicle for the IS department

LanguageAccess can help IS managers reduce the backlog of information requests. Rather than requesting an answer from the IS department, users can get the information themselves by asking LanguageAccess in their own words.

And question logs can be developed by the IS department and distributed to all users for an organization-wide database analysis.

A powerful natural language engine based on grammars and dictionaries.



LanguageAccess does not reinvent the method for accessing relational databases. SQL commands are the standard. LanguageAccess simply translates your natural language question into the appropriate SQL command for accessing the information you request.

A peek inside

LanguageAccess has three main components:

- **The Query Interface** – allows you to ask questions.
- **The Natural Language Engine** – gives LanguageAccess the power to analyze your questions and translates them into the appropriate SQL statement.
- **The Customization Tool** – lets you define your organization-specific vocabulary.

Query Interface

The Query Interface is where you begin asking your questions.

You use the Query Interface with AS or QMF. You can enter questions, specify how your answers should be presented, and work with the results. In addition, you can save frequently used questions in a question log.

The Query Interface is designed to help you become more productive. It offers you the advantage of using natural language questions to retrieve answers, together with the range of management decision-support features offered within AS or QMF.

"What are the monthly sales results?"

Natural Language Engine

The Natural Language Engine analyzes your question grammatically, interprets the meaning, and ensures accurate answers. It does not simply rely on key word matches. Instead, it has a linguistic dimension that offers:

Lexicons, or dictionaries – to store a basic vocabulary and your organization-specific vocabulary. For example, after you define *net profit* to be *gross sales minus expenses*, the lexical analysis uses this definition in determining the answer to any question using *net profit*.

Syntax, or grammar – to consider the structure of your question. For example, the syntactic analysis helps determine the correct grammatical form of a *what* question or a *how* question.

Semantics – to help understand the exact meaning of your question. For example, semantics help distinguish between words that have more than one meaning.

Pragmatics – to resolve some situation dependent interpretations in your questions. For example, the pragmatic analysis can help determine pronoun references in a question.

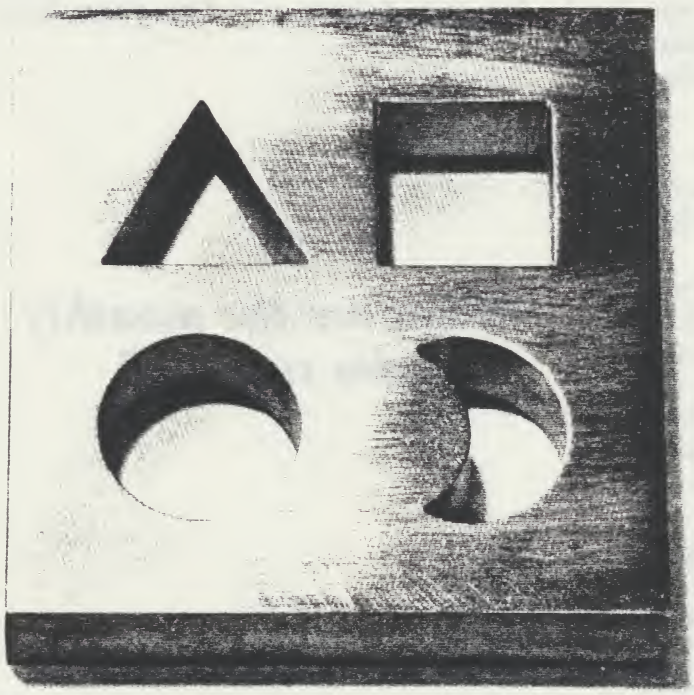
The four layers of the LanguageAccess linguistic dimension give the Natural Language Engine clear advantages – the power to correctly analyze the questions and the accuracy to ensure the right answers.

Customization Tool

The Customization Tool is used to define the vocabulary for the users. Typically, the Customization Tool is used by the IS department. They know both the database and the organization-specific vocabulary of the users. The Customization Tool is used to include specific terms or acronyms used within your own organization, and to designate particular tables that individual users will need to access for their specific areas.

After using the Customization Tool, the users can phrase questions with words they would normally use in their jobs. As users request more words, these words can easily be added to the vocabulary. Over time, this allows users to become more sophisticated and detailed in their questions and database analysis.

Matching LanguageAccess to your requirements.



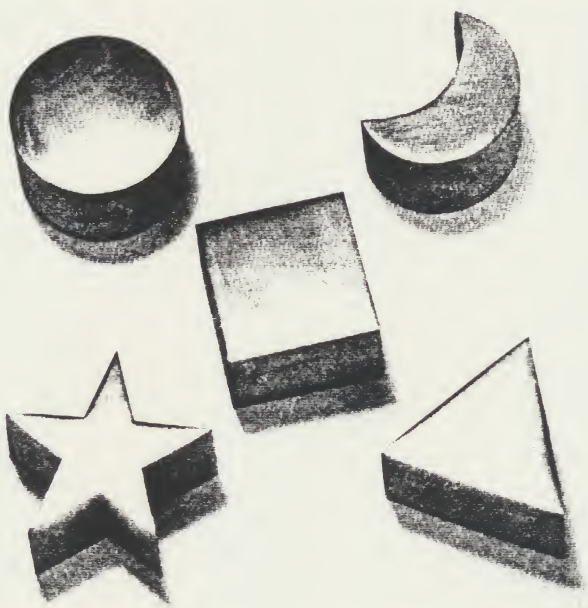
LanguageAccess matches your requirements in two important ways: it complements your existing database access methods, and it lets you build natural language access into your applications.

Build LanguageAccess applications

LanguageAccess adds natural language capabilities to the query facilities of AS and QMF. Likewise, you can build natural language access into your own applications.

Access to the Natural Language Engine, the component that translates your natural language questions into SQL, is provided by a well defined, published application programming interface (API). This API allows the IS department to add natural language capabilities to database applications that you may be developing. And that means users of your applications will benefit from the convenience of asking natural language questions.

IBM support and service personnel can help you determine the best way to integrate LanguageAccess into your present information system.



Ask today about LanguageAccess

The best way to find out what LanguageAccess can do for you is to ask it questions yourself. Let LanguageAccess convince you that there is no easier way to access information than through your very own words.

For more information on LanguageAccess, or to schedule a product demonstration, contact your local IBM representative or the IBM branch office nearest you.

– LanguageAccess stands behind your words!

LanguageAccess product summary

Licensed program number: Order IBM SAA LanguageAccess with the licensed program number 5688-172.

Additional information: Ask for *LanguageAccess General Information*, GH19-6680, for additional information.

Demonstration: Contact IBM to arrange a demonstration of LanguageAccess.

Languages: LanguageAccess currently supports English and German.

Application Programming Interface (API): The API for the Natural Language Engine is published for use in your own applications: *LanguageAccess Application Programming Guide*, SH19-6687.

IBM System Application Architecture (SAA): LanguageAccess follows the SAA guidelines to ensure applicability to strategic IBM operating systems, and consistency across IBM applications.

Requirements

The requirements for the Natural Language Engine and Query Interface are:

- Any IBM processor capable of running:
  - MVS/XA* with DB2*
  - MVS/ESA* with DB2
  - VM/XA with SQL/DS
  - AS or QMF.
- Any IBM 3270 terminal or IBM PC emulating IBM 3270 terminals that can be used with AS or QMF.

The requirements for the Customization Tool are:

- Any IBM Personal System/2* (PS/2*) capable of running OS/2* Extended Edition 1.2. A Model 70 or 80 is recommended.

IBM SAA LanguageAccess

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